

**AMENDMENTS TO THE CLAIMS**

The following listing of claims will replace all prior versions, and listings, of claims in the application. Compared to prior versions, claims 33, 63, and 66 are amended. Claims 67 and 68 are new.

**Listing of Claims:**

1-32 (Canceled).

33. (Currently Amended) A bi-layer wax-film composite having a total thickness of less than 5 mm, comprising:

(a) a pH-sensitive mucoadhesive layer, ~~comprising~~ consisting essentially of:

(1) at least one water-insoluble swellable anionic mucoadhesive polymer;  
and

(2) at least one anionic pH-sensitive film-forming polymer;

(b) a water-insoluble wax layer bonded to the pH-sensitive mucoadhesive layer;  
and

(c) at least one molecule of interest;

wherein the pH-sensitive mucoadhesive layer adheres to a wet mucosal surface for delivery of the molecule of interest thereto.

34. (Original) The wax-film composite of claim 33, wherein the pH-sensitive mucoadhesive layer is present at a concentration of 20% to 90% by weight, and the water-insoluble wax layer is present at a concentration of 10% to 80% by weight.

35. (Canceled)

36. (Previously presented) The wax-film composite of claim 33, wherein the water-insoluble swellable anionic mucoadhesive polymer is polyacrylic acid cross-linked with polyalkenyl ether or divinyl glycol.

37. (Previously presented) The wax-film composite of claim 33, wherein the water-insoluble swellable anionic mucoadhesive polymer is Noveon or Carbomer.
38. (Previously presented) The wax-film composite of claim 33, wherein the water-insoluble swellable anionic mucoadhesive polymer is Noveon.
39. (Previously presented). The wax-film composite of claim 33, wherein the anionic pH-sensitive film-forming polymer present in the pH-sensitive mucoadhesive layer is a copolymer of methacrylic acid and acrylic or methacrylic ester.
40. (Previously presented) The wax-film composite of claim 33, wherein the anionic pH-sensitive film-forming polymer is a Eudragit polymer.
41. (Previously presented) The wax-film composite of claim 38, wherein the anionic pH-sensitive film-forming polymer is Eudragit S100.
42. (Original) The wax-film composite of claim 33, wherein the water-insoluble wax layer comprises at least one water-insoluble pharmaceutical wax having a melting point between 40° C and 100° C and at least one water-soluble or water-swellaable polymer.
43. (Original) The water-insoluble pharmaceutical wax of claim 42, wherein said wax is DENTSPLY® Utility Wax, beeswax, emulsifying wax, microcrystalline wax, carnauba wax, paraffin wax, white wax, yellow wax, or other suitable pharmaceutical wax.
44. (Previously Presented) The water-soluble or swellable polymer of claim 42, wherein said polymer is present in the insoluble wax layer at a concentration from 0.05% to 10% by weight.
45. (Original) The water-soluble or swellable polymer of claim 42, wherein said water-soluble or water-swellaable polymer is tragacanth, polyvinyl pyrrolidone, polyvinyl alcohol, cross-linked polyacrylic acid, polyethylene glycol, a cellulose polymer

derivative, or other suitable pharmaceutical polymer that is water-soluble or water-swellaable.

46. (Previously presented) The wax-film composite of claim 33, wherein the molecule of interest is contained in and released from either the pH-sensitive mucoadhesive layer or the water-insoluble wax layer.

47. (Withdrawn) The wax-film composite of claim 33, wherein the molecule of interest comprises an active pharmaceutical compound, a sweetener, a flavoring agent, a diagnostic agent, or a combination thereof.

48. (Withdrawn) The wax-film composite of claim 33, wherein the molecule of interest is amlexanox.

49. (Withdrawn) The wax-film composite of claim 33, wherein the molecule of interest is triclosan.

50. (Withdrawn) The wax-film composite of claim 33, wherein the molecule of interest is lidocaine, benzocaine, or dyclonine.

51. (Previously presented) The wax-film composite of claim 33, wherein the molecule of interest is a peptide or protein.

52. (Withdrawn) The wax-film composite of claim 33, wherein the molecule of interest is at least one benzodiazepine drug or derivative thereof.

53. (Withdrawn) The wax-film composite of claim 33, wherein the molecule of interest is hirudin or hirudin complexed with a substance of opposite charge.

54. (Withdrawn) The wax-film composite of claim 53, wherein said substance of opposite charge is chitosan or protamine.

55. (Withdrawn) The wax-film composite of claim 33, wherein the molecule of interest is plasmid DNA or plasmid DNA complexed with a substance of opposite charge such as chitosan, protamine, or a cationic lipid.

56. (Previously Presented) The wax-film composite of claim 33, wherein the wax-film composite is applied to an application site comprising: the skin, mouth, vagina, nasal cavity, or other accessible mucosal site.

57. (Previously Presented) The wax-film composite of claim 56, wherein the wax-film composite adheres to the application site for at least one hour.

58-62. (Canceled)

63. (Currently amended) The wax-film composite of claim 41, wherein the weight ratio of Noveon to Eudragit is from about 2:1 to about 4:1.

64. (Previously presented) The wax-film composite of claim 47, wherein the active pharmaceutical compound is an antimicrobial, an antiviral, an antiinflammatory, an antiseptic, an antihistamine, a local anesthetic, a disinfectant, a keratolytic, an analgesic, an anti-migraine or an antifungal.

65. (Previously presented) The wax-film composite of claim 33, wherein the water-insoluble wax layer comprises at least one water-insoluble pharmaceutical wax having a melting point between 40° C and 100° C.

66. (Currently amended) A bi-layer wax-film composite having a total thickness of less than 5 mm, comprising:

(a) a pH-sensitive mucoadhesive layer, ~~comprising~~ consisting essentially of:

(1) at least one water-insoluble swellable anionic mucoadhesive polymer;  
and

- (2) at least one anionic pH-sensitive film-forming copolymer of methacrylic acid and acrylic or methacrylic ester;
- (b) a water-insoluble wax layer bonded to the pH-sensitive mucoadhesive layer; and
- (c) at least one molecule of interest;

wherein the pH-sensitive mucoadhesive layer adheres to a wet mucosal surface for delivery of the molecule of interest thereto.

67. (New) A bi-layer wax-film composite having a total thickness of less than 5 mm, comprising:

- (a) a pH-sensitive mucoadhesive layer, comprising:
  - (1) at least one water-insoluble swellable anionic mucoadhesive polymer; and
  - (2) at least one anionic pH-sensitive film-forming polymer;
- (b) a water-insoluble wax layer bonded to the pH-sensitive mucoadhesive layer; and
- (c) at least one molecule of interest;

wherein the pH-sensitive mucoadhesive layer adheres to a wet mucosal surface for delivery of the molecule of interest thereto.

68. (New) A bi-layer wax-film composite having a total thickness of less than 5 mm, comprising:

- (a) a pH-sensitive mucoadhesive layer, consisting of:
  - (1) at least one water-insoluble swellable anionic mucoadhesive polymer; and
  - (2) at least one anionic pH-sensitive film-forming polymer;
- (b) a water-insoluble wax layer bonded to the pH-sensitive mucoadhesive layer; and
- (c) at least one molecule of interest;

wherein the pH-sensitive mucoadhesive layer adheres to a wet mucosal surface for delivery of the molecule of interest thereto.